



Governor's Drought Advisory Committee Meeting

March 9, 2006

National Weather Service

Gina Loss

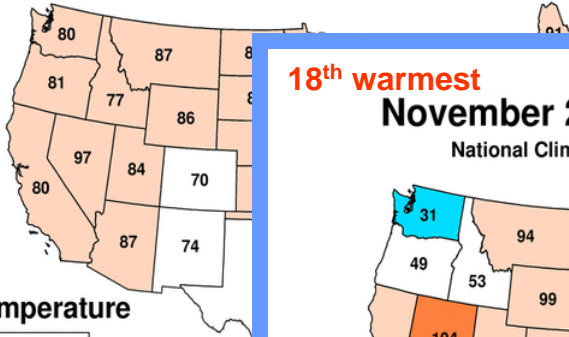
Temperature Rankings

Averaged Across Entire State

25th warmest

October 2005 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA



Temperature

1 = Coldest
111 = Warmest



Record
Coldest



Much
Below
Normal

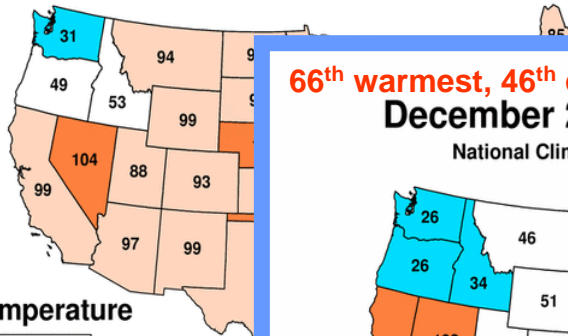


Below
Normal

18th warmest

November 2005 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA



Temperature

1 = Coldest
111 = Warmest



Record
Coldest



Much
Below
Normal

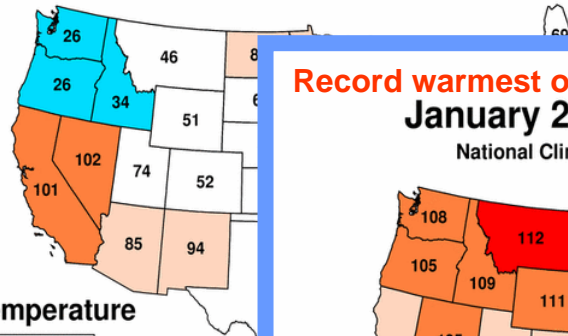


Below
Normal

66th warmest, 46th coldest

December 2005 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA



Temperature

1 = Coldest
111 = Warmest



Record
Coldest



Much
Below
Normal

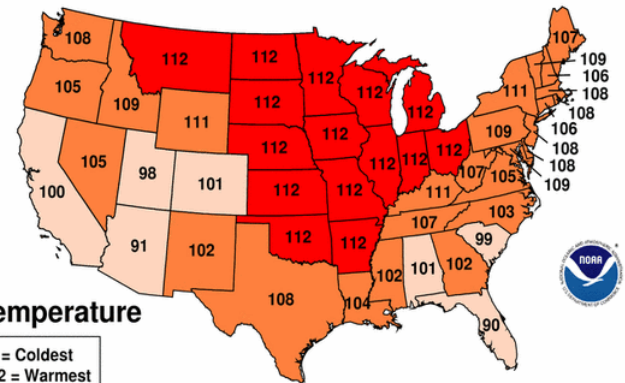


Below
Normal

Record warmest of 112 years

January 2006 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA



Temperature

1 = Coldest
112 = Warmest



Record
Coldest



Much
Below
Normal



Below
Normal



Near
Normal



Above
Normal



Much
Above
Normal



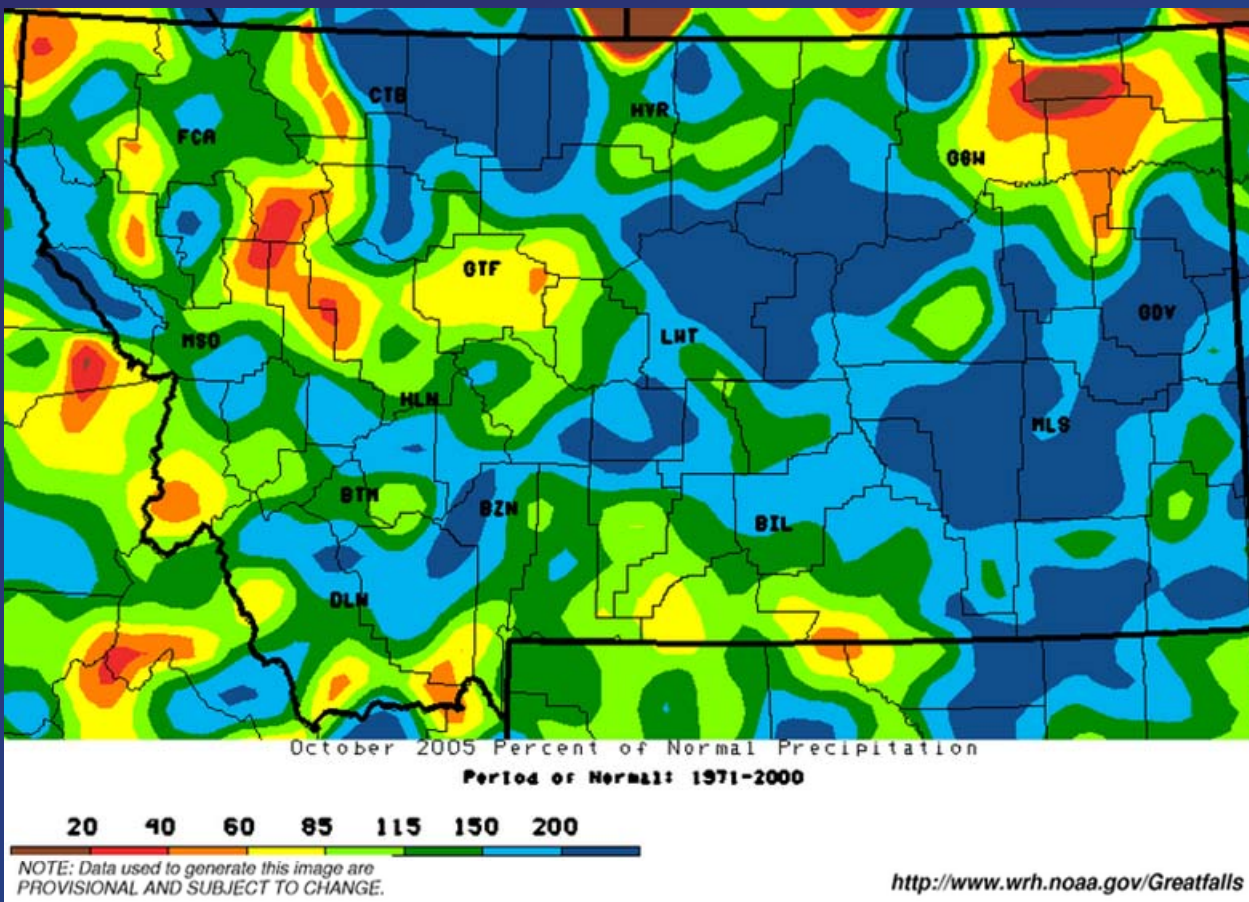
Record
Warmest



Percent of Normal Precipitation

October 2005

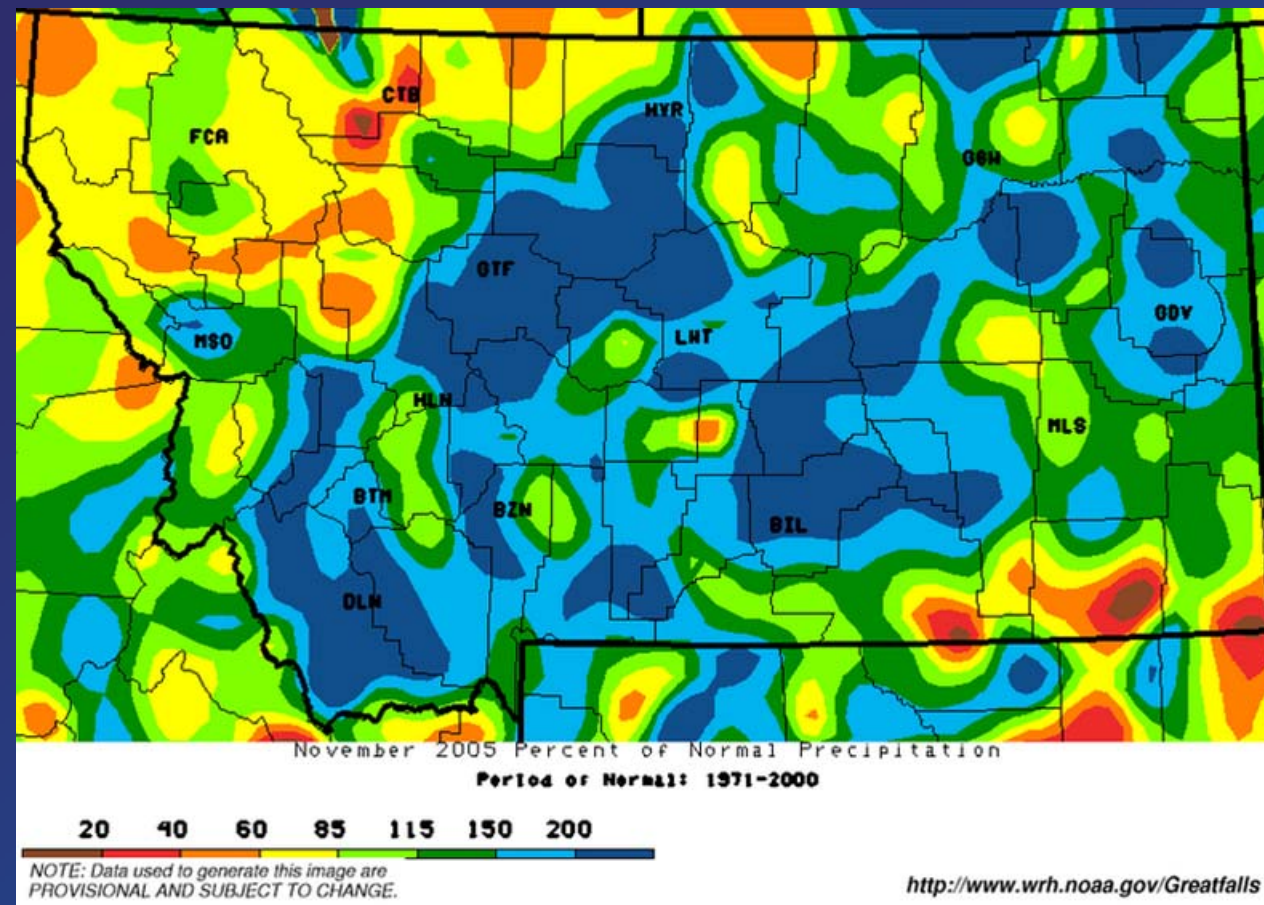
- Most of state near to above normal
- Large areas well above normal
 - North central – central – southeast
- Small areas below to well below normal
 - Western portion of Rocky Mountain Front
 - Northeast



Percent of Normal Precipitation

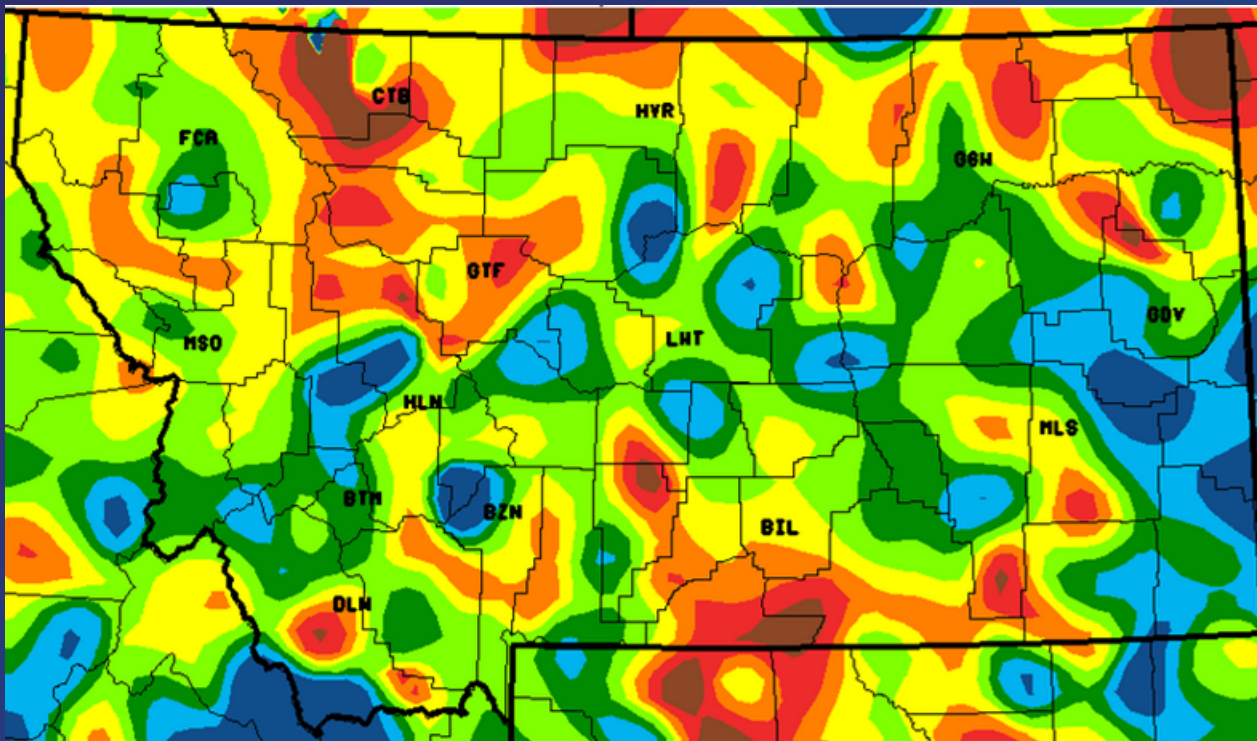
November 2005

- Most of state near to above normal
- Large areas well above normal
 - Southwest – central – northeast
- Some areas below to well below normal
 - Northwest – Rocky Mountain Front
 - Southeast



Percent of Normal Precipitation

December 2005



December 2005 Percent of Normal Precipitation
Period of Normal: 1971-2000

20 40 60 85 115 150 200

NOTE: Data used to generate this image are
PROVISIONAL AND SUBJECT TO CHANGE.

<http://www.wrh.noaa.gov/Greatfalls>

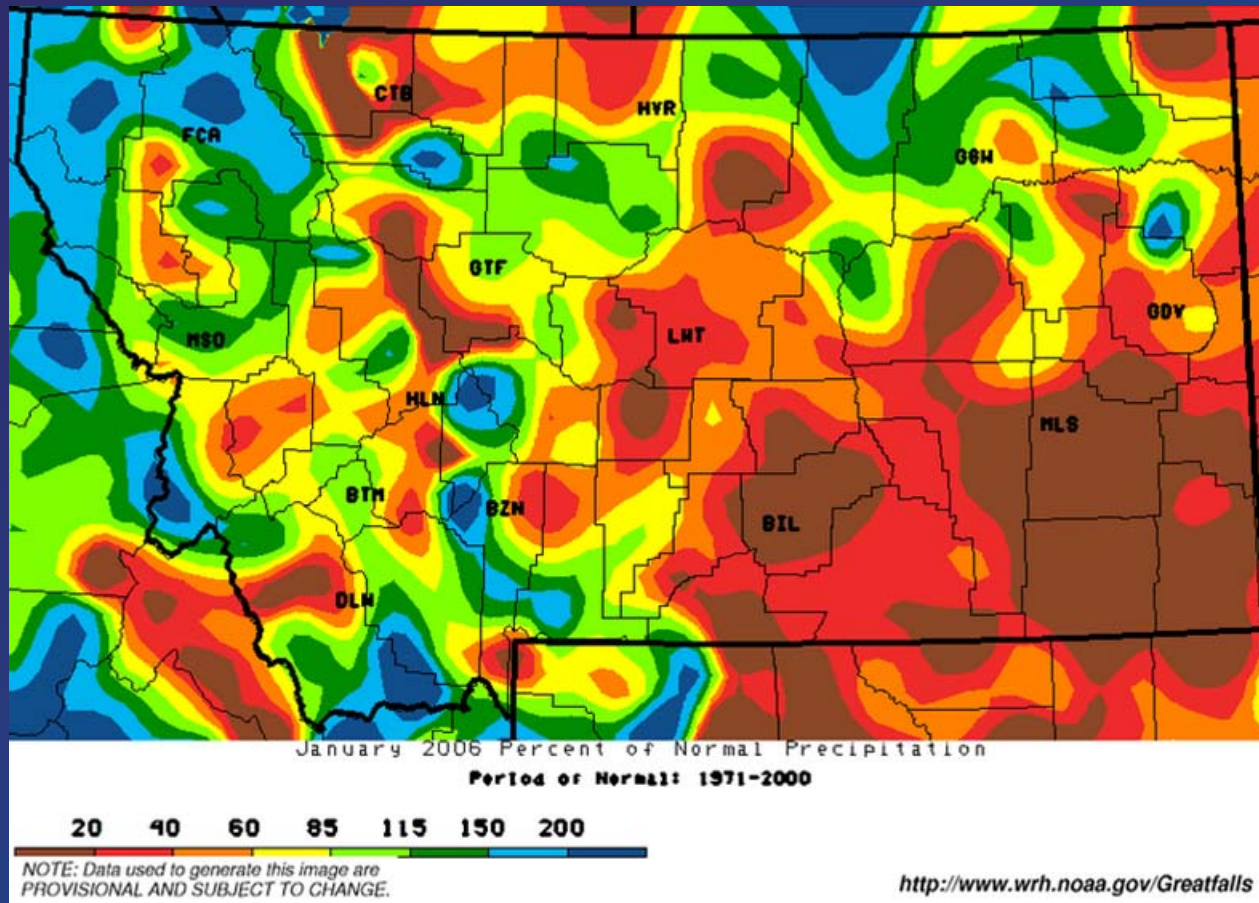
💧 Drier

- *About 2/3 of state near to above normal*
- *Still pockets well above normal*

💧 Larger areas below to well below normal

- *Rocky Mountain Front*
- *Northeast*
- *South central*

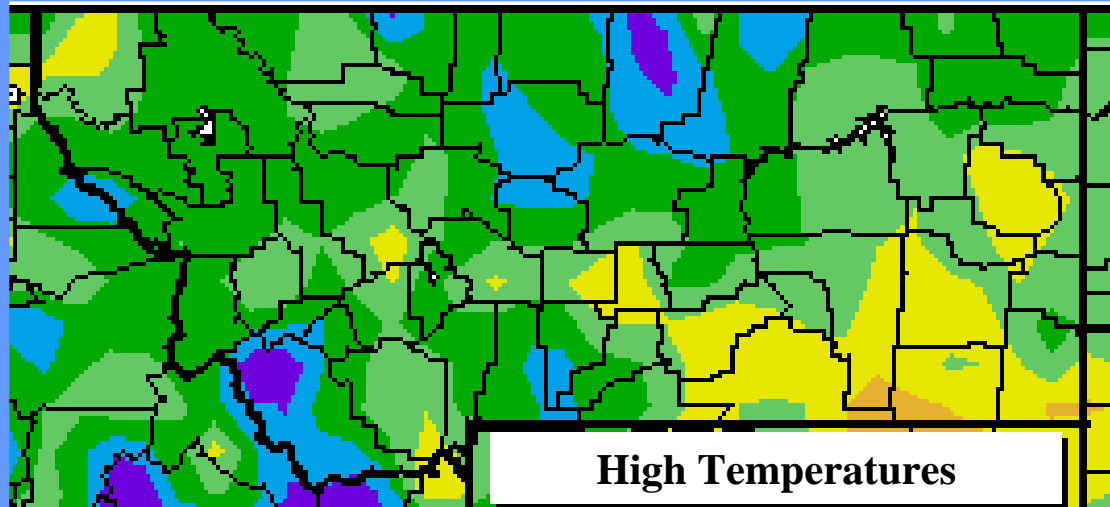
Percent of Normal Precipitation January 2006



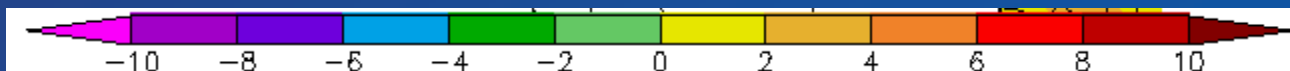
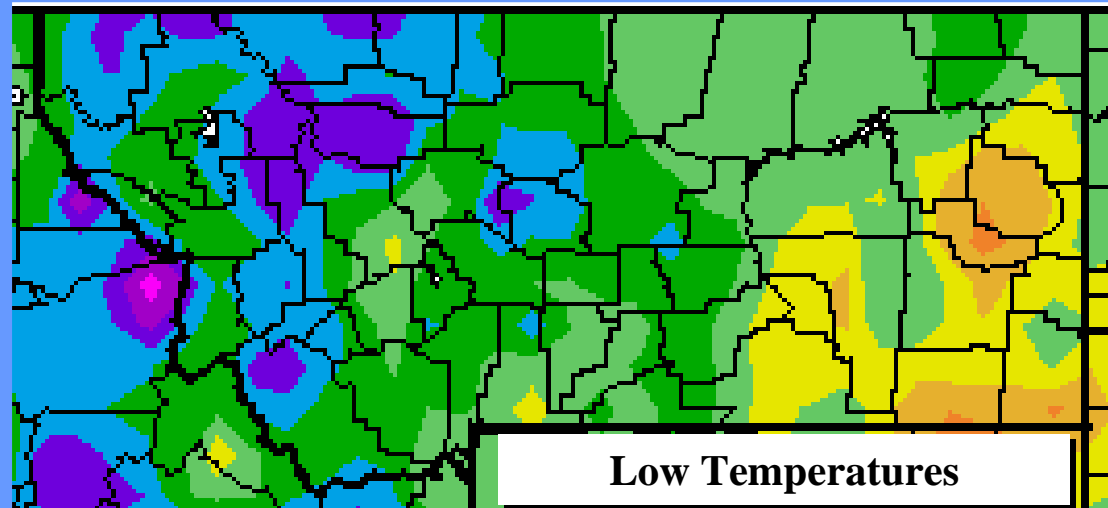
- Drier yet ... about 2/3 of state below to well below normal
 - *Rocky Mountain Front*
 - *Central – south central – southeast – northeast*
- Still pockets well above normal

Temperature Anomalies

February 5 – March 6



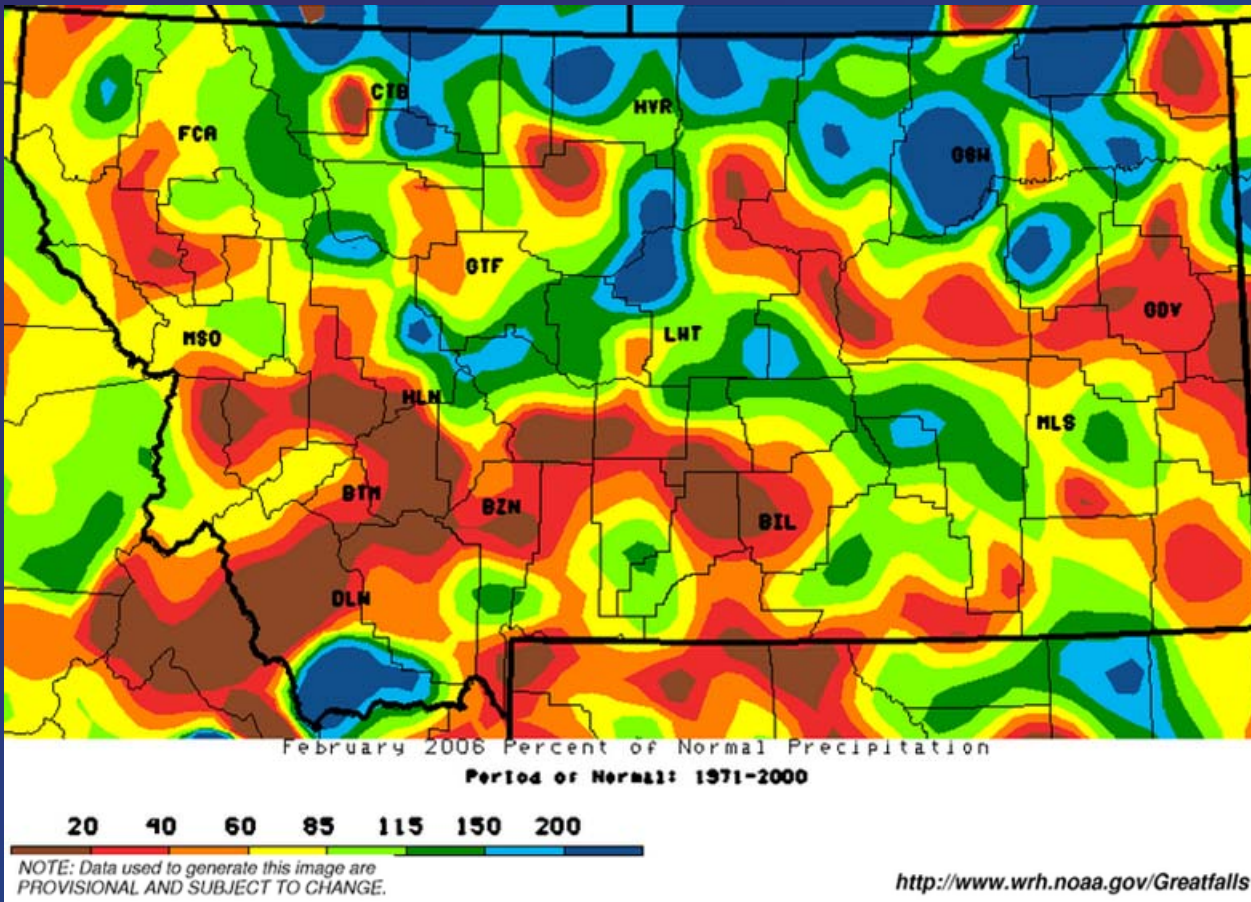
- Temperatures across the state near to below normal
 - *Highs running up to 6 degrees below normal*
 - *Lows generally up to 8 degrees below normal*
 - *Area of southeast Montana near to 4 degrees above normal*



Percent of Normal Precipitation

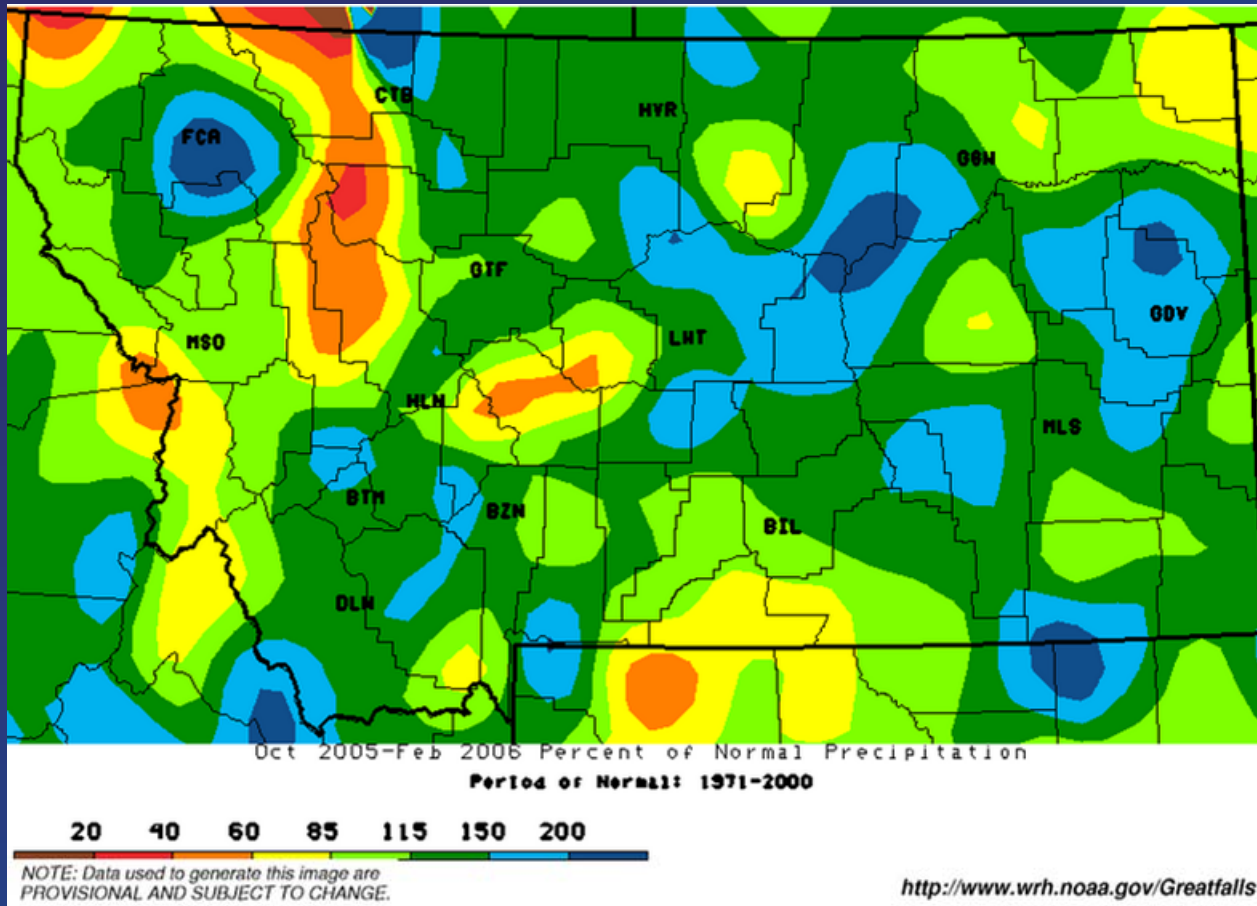
February 2006

- Above to well above average across hi-line
 - *Had been below average Oct – Jan*
- Still some large areas below to well below average
 - *Southwest – south central*
 - *East*



Percent of Normal Precipitation

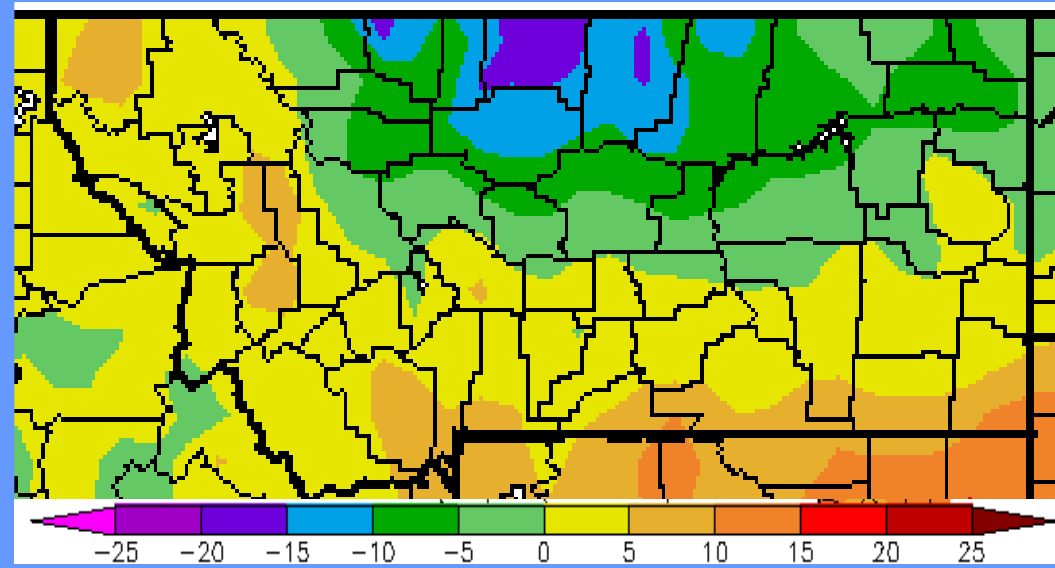
Water Year 2006



- October 2005 – February 2006
- Most of Montana at least near normal
 - *Large areas above normal*
- Only isolated areas below normal

Departure from Average Temperature

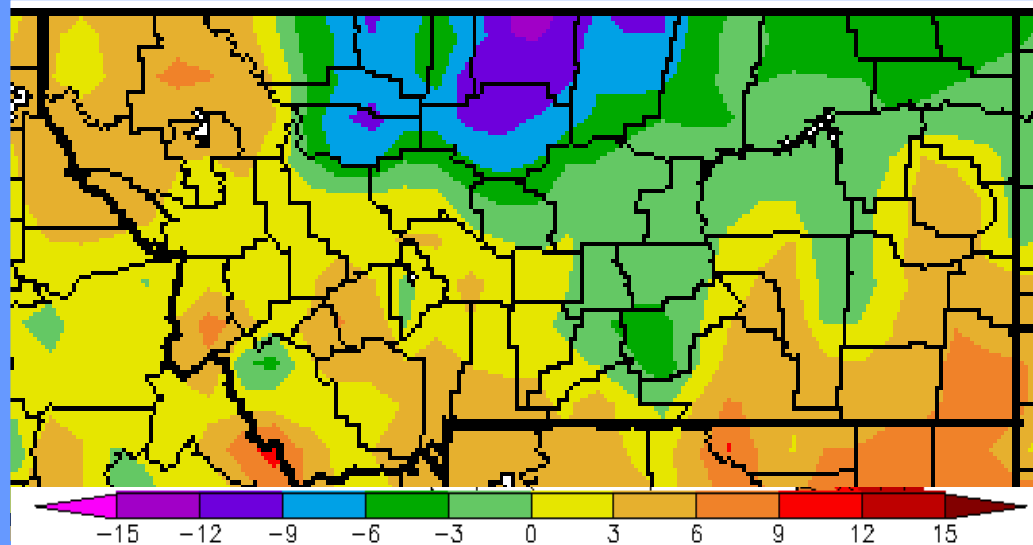
March 1 – March 6, 2006



- Warmer west and south
 - Average highs and lows near to 10 degrees above normal
- Cooler north
 - Average highs and lows near to 20 degrees below normal

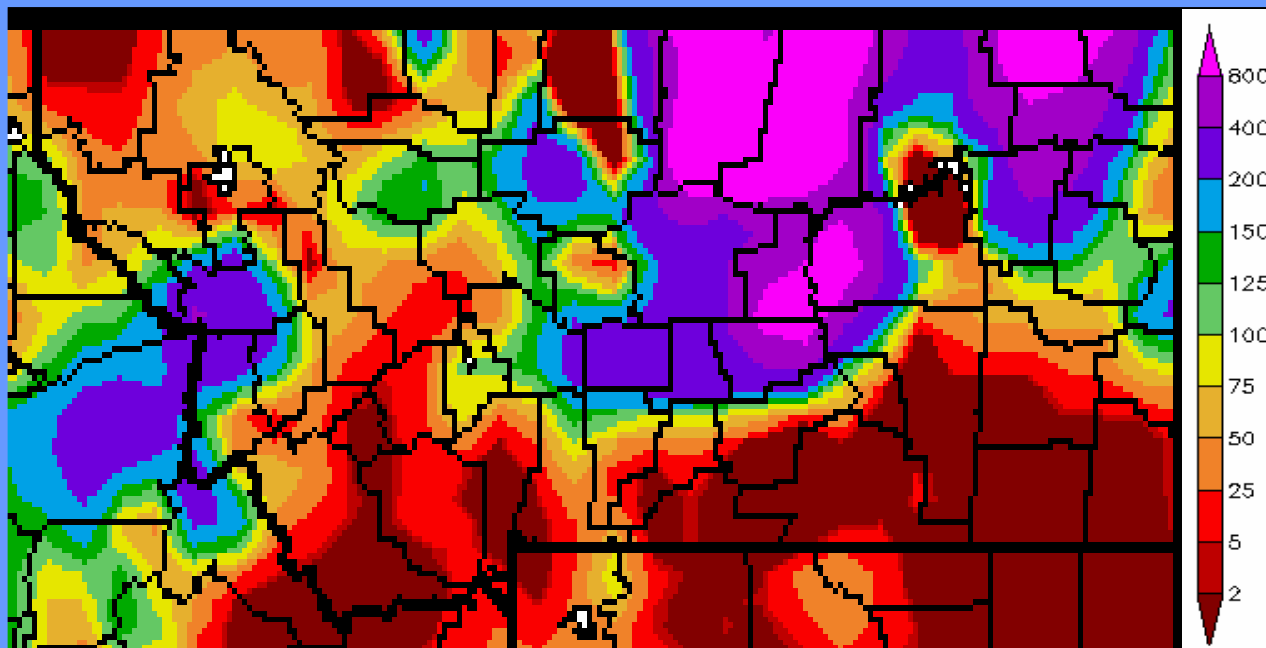
High
Temperatures

Low
Temperatures



Percent of Average Precipitation

March 1 – March 6, 2006



- Much of north central... central and eastern Montana have received above to well above normal precipitation
 - *Upslope/over-running events*
- Northwest... southwest through southeast dry so far this month

Precipitation Totals

March and Water Year 2006

	MARCH 1 - 6				WATER YEAR TO DATE			
	ACTUAL PCPN	NRML PCPN	+/- NRML	% OF NRML	ACTUAL PCPN	NRML PCPN	+/- NRML	% OF NRML
WESTERN MONTANA								
BUTTE	0.00	0.12	-0.12	0	3.17	3.04	0.13	104
KALISPELL	0.20	0.24	-0.04	83	7.65	6.92	0.73	111
MISSOULA	0.68	0.18	0.50	378	6.17	4.95	1.22	125
MULLAN PASS	0.50	0.67	-0.17	75	28.87	19.64	9.23	147
SOUTHWEST MONTANA								
BOULDER	0.01	0.06	-0.05	17	2.77	2.36	0.41	117
BELGRADE FIELD	0.00	0.17	-0.17	0	4.23	3.80	0.43	111
BOZEMAN MSU	0.00	0.22	-0.22	0	6.79	5.26	1.53	129
DILLON AIRPORT	0.00	0.06	-0.06	0	2.09	1.75	0.34	119
ENNIS	0.01	0.12	-0.11	8	4.62	3.13	1.49	148
HELENA	0.01	0.12	-0.11	8	5.47	2.60	2.87	210
LAKEVIEW	0.00	0.30	-0.30	0	5.27	5.88	-0.61	90
LIMA	0.00	0.12	-0.12	0	1.05	2.68	-1.63	39
ROGERS PASS 9 NNE	0.09	0.18	-0.09	50	3.07	4.23	-1.16	73
TOWNSEND	0.06	0.06	0.00	100	2.56	2.04	0.52	125
WISDOM	0.04	0.12	-0.08	33	4.36	3.50	0.86	125

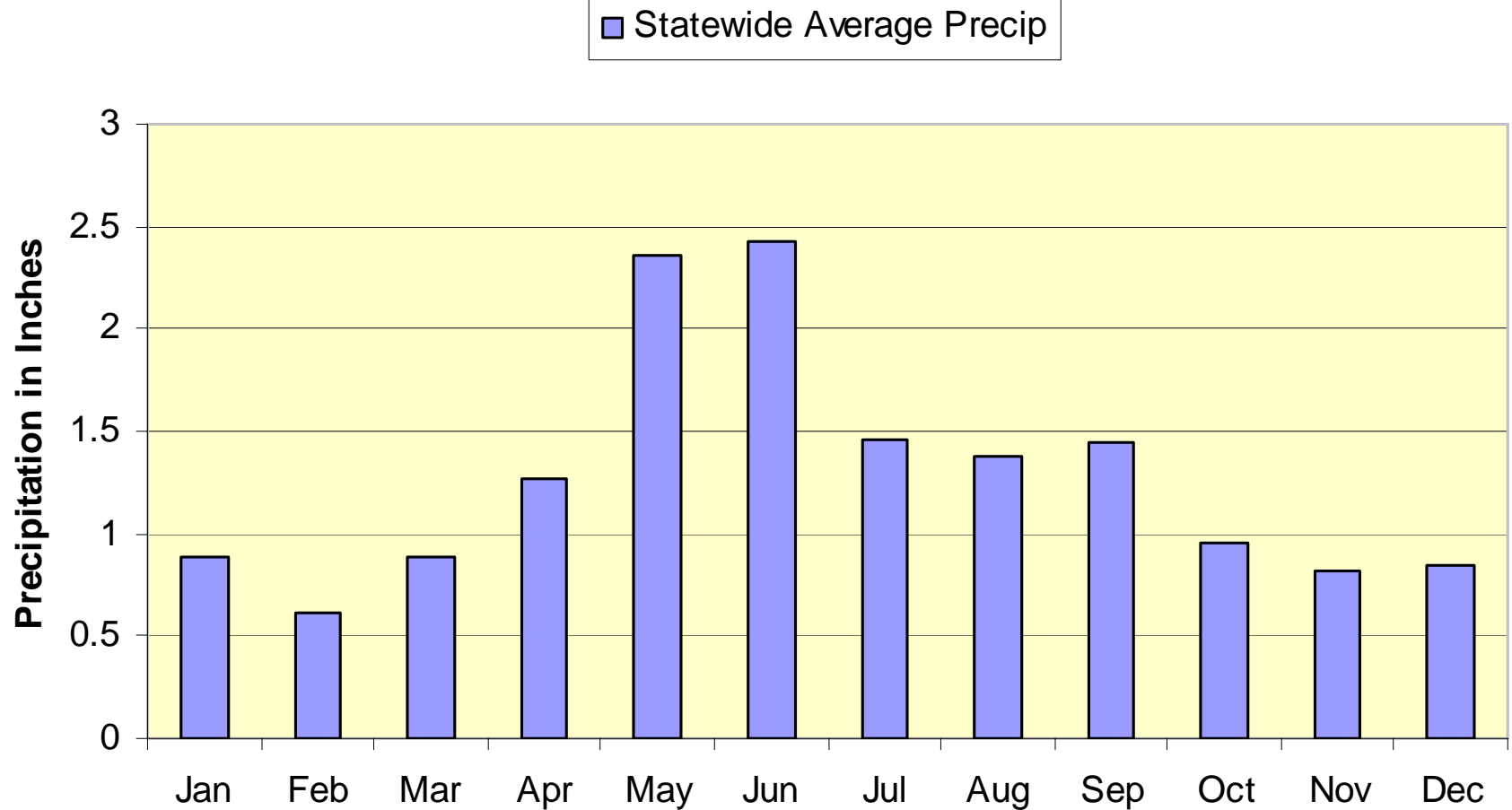
Precipitation Totals

March and Water Year 2006

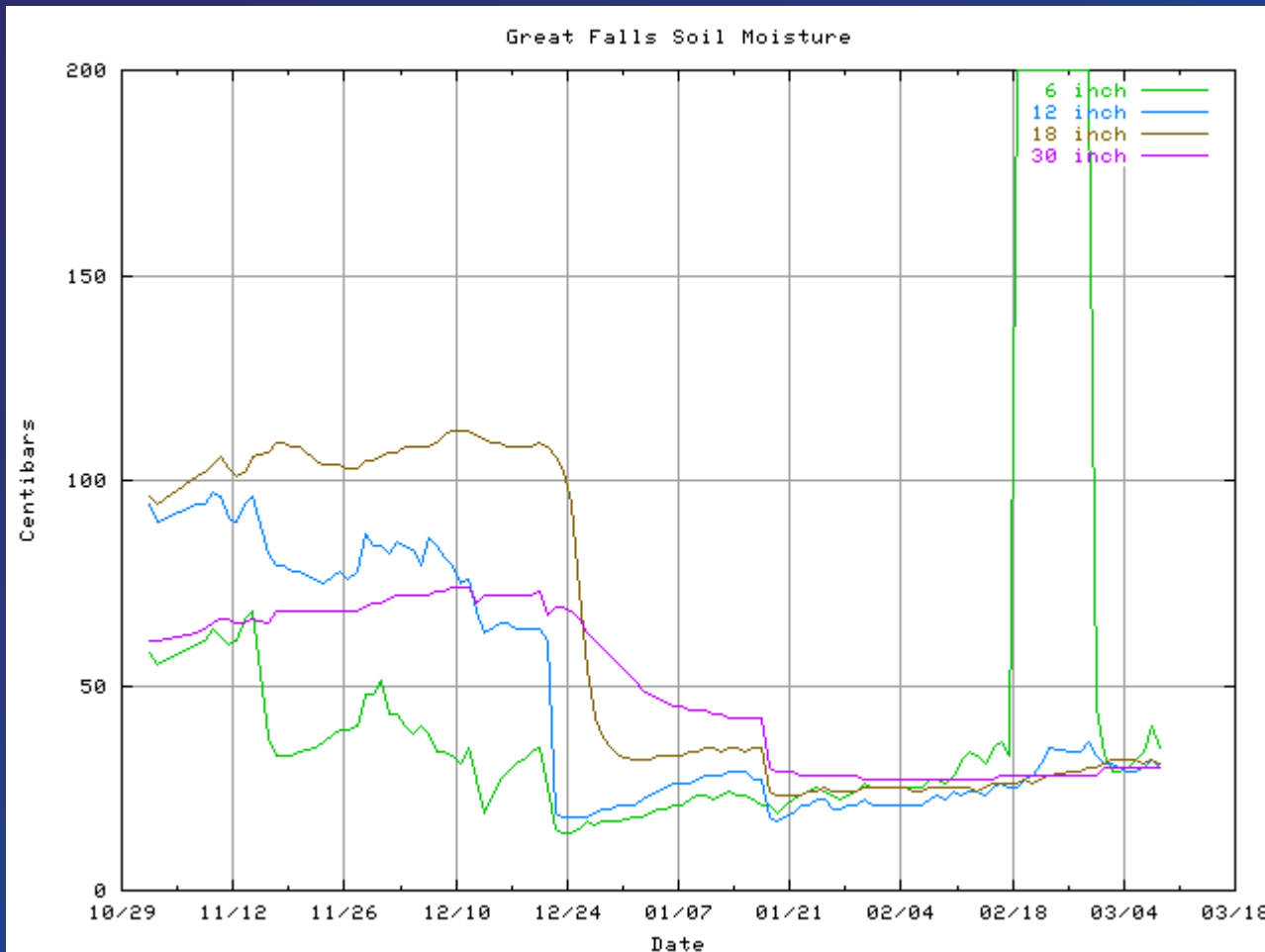
	MARCH 1 - 6				WATER YEAR TO DATE			
	ACTUAL PCPN	NRML PCPN	+/- NRML	% OF NRML	ACTUAL PCPN	NRML PCPN	+/- NRML	% OF NRML
CENTRAL MONTANA								
BILLINGS	0.01	0.17	-0.16	6	3.96	4.17	-0.21	95
CASCADE 20 SSE	0.03	0.12	-0.09	25	3.97	2.90	1.07	137
CHESTER	0.00	0.06	-0.06	0	1.43	1.95	-0.52	73
CHOUTEAU	0.08	0.06	0.02	133	3.36	1.78	1.58	189
CONRAD	0.00	0.12	-0.12	0	1.96	2.39	-0.43	82
CUT BANK	0.00	0.06	-0.06	0	1.17	1.95	-0.78	60
FORT ASSINNIBOINE	0.27	0.12	0.15	225	3.21	2.69	0.52	119
FORT BENTON	0.25	0.12	0.13	208	3.43	2.92	0.51	117
GOLD BUTTE 7 N	0.02	0.12	-0.10	17	2.58	2.54	0.04	102
GRASS RANGE	0.45	0.12	0.33	375	5.46	3.39	2.07	161
GREAT FALLS	0.14	0.16	-0.02	88	3.31	3.56	-0.25	93
HAVRE	0.10	0.12	-0.02	83	2.83	2.53	0.30	112
LIVINGSTON	0.09	0.12	-0.03	75	4.72	3.74	0.98	126
LEWISTOWN	0.39	0.18	0.21	217	4.82	4.27	0.55	113
MARTINSDALE 3 NNW	0.25	0.11	0.14	227	3.05	2.71	0.34	113
NEIHART 8 NNW	0.28	0.21	0.07	133	5.84	5.22	0.62	112
STANFORD	0.05	0.14	-0.09	36	3.13	3.60	-0.47	87
VALIER	0.01	0.06	-0.05	17	2.28	1.95	0.33	117
WHITE SULPHUR SPRGS	0.16	0.12	0.04	133	2.71	2.87	-0.16	94
EASTERN MONTANA								
GLASGOW	0.02	0.06	-0.04	33	2.76	2.16	0.60	128
MILES CITY	0.01	0.06	-0.05	17	3.31	2.98	0.33	111

Statewide Average Precipitation

March is transition to spring precipitation



Great Falls Soil Moisture



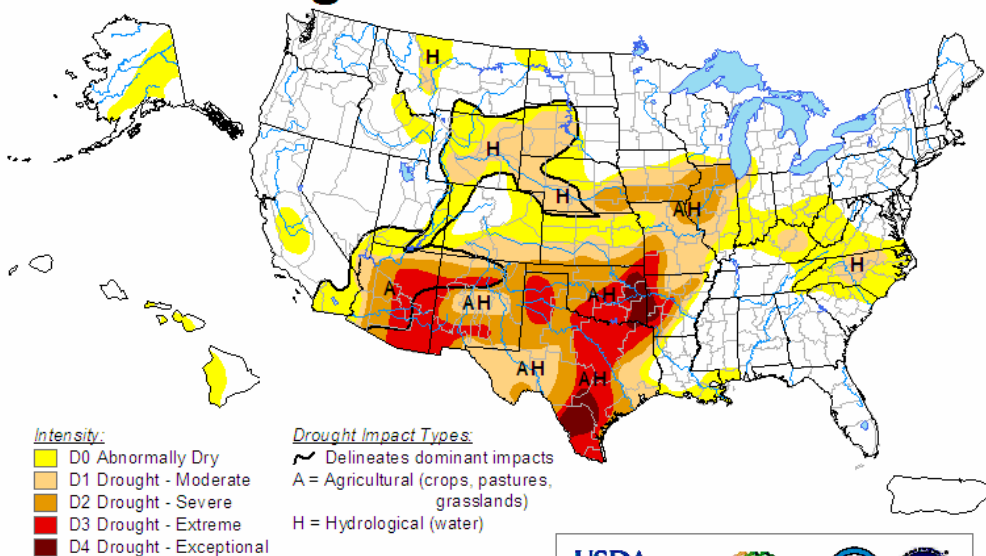
- 💧 All levels moist
- *Between 25 cb and 50 cb*

National Drought Monitor

Issued March 7, 2006

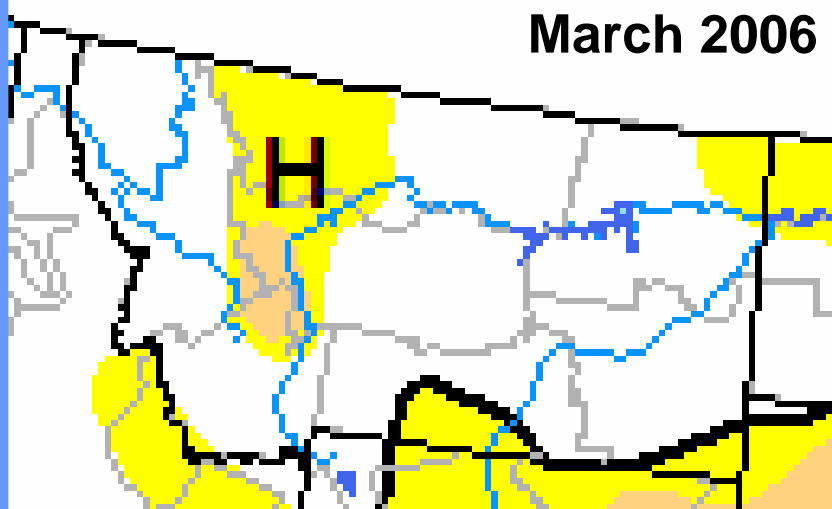
U.S. Drought Monitor

March 7, 2006
Valid 7 a.m. EST



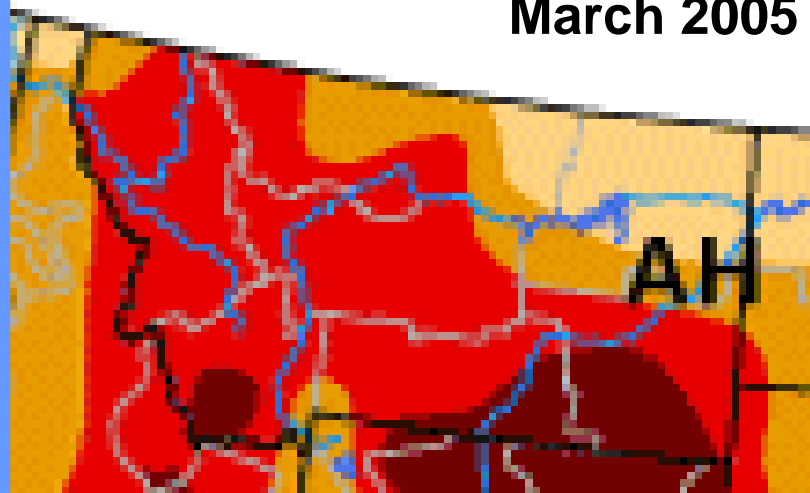
The Drought Monitor
Local conditions
for forecast stat

March 2006



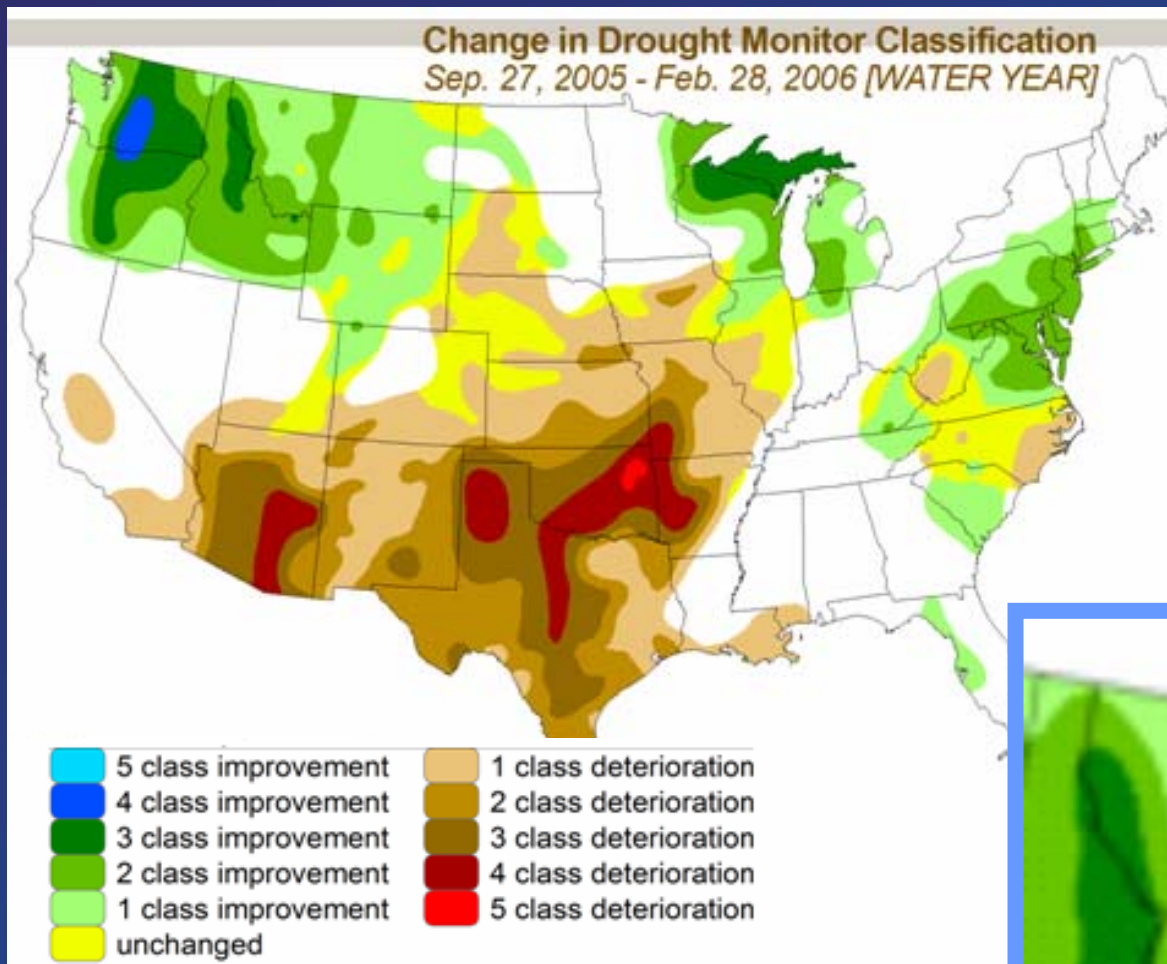
- Most of Montana cleared of any drought category
- Some lingering areas abnormally dry (D0)
 - Rocky Mountain Front
 - South central
 - Northeast
- Isolated area moderately dry
 - Southern Rocky Mountain Front

March 2005

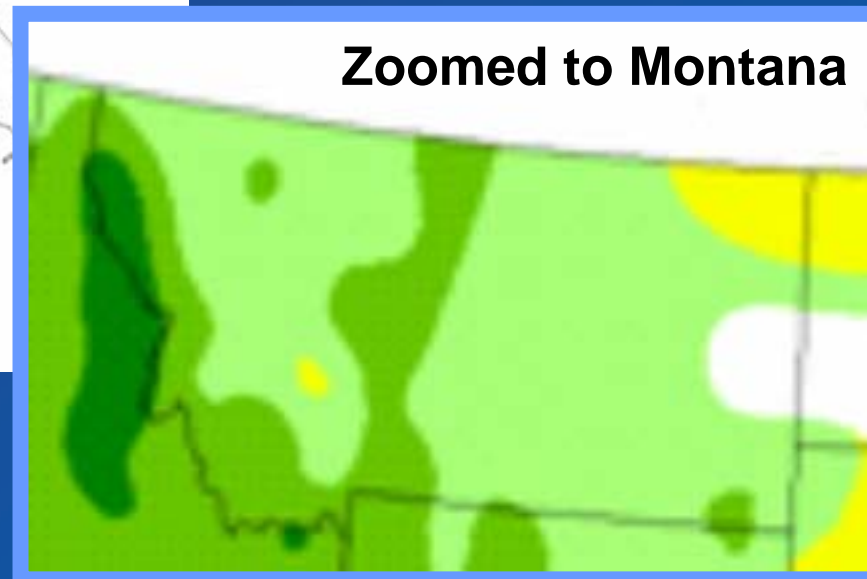


Change in Drought Classification

From Beginning of Water Year



- Most of Montana has improved at least 1 category
- West, southwest and central have areas with 2-3 category improvement
- No area has deteriorated

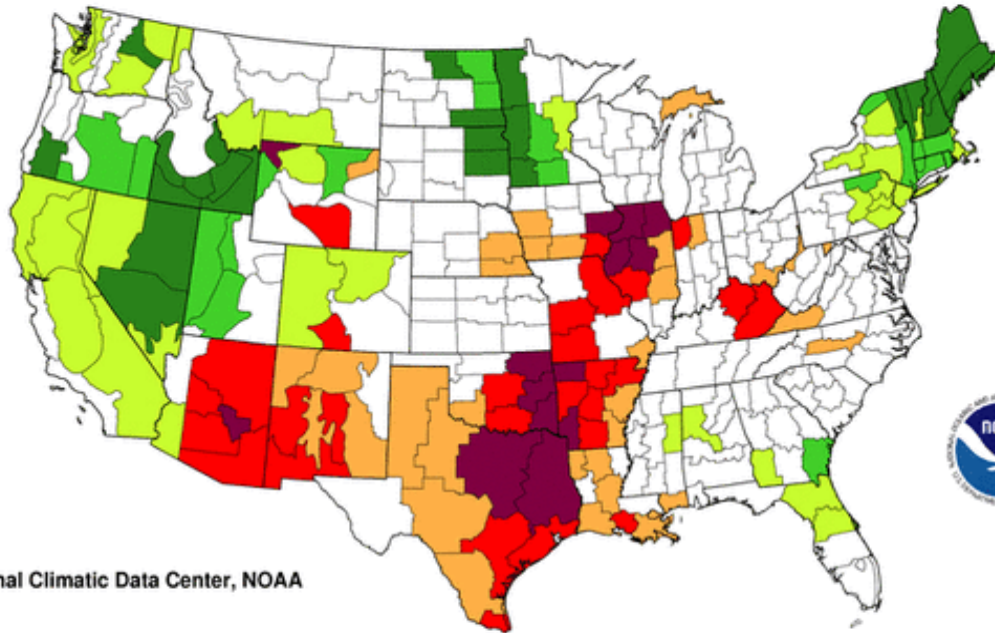


Palmer Hydrological Drought Index

February 2006

Palmer Hydrological Drought Index
Long-Term (Hydrological) Conditions

February 2006



National Climatic Data Center, NOAA

extreme
drought



-4.00
and
below

severe
drought



-3.00
to
-3.99

moderate
drought



-2.00
to
-2.99

mid-
range



-1.99
to
+1.99

moderately
moist



+2.00
to
+2.99

very
moist



+3.00
to
+3.99

extremely
moist

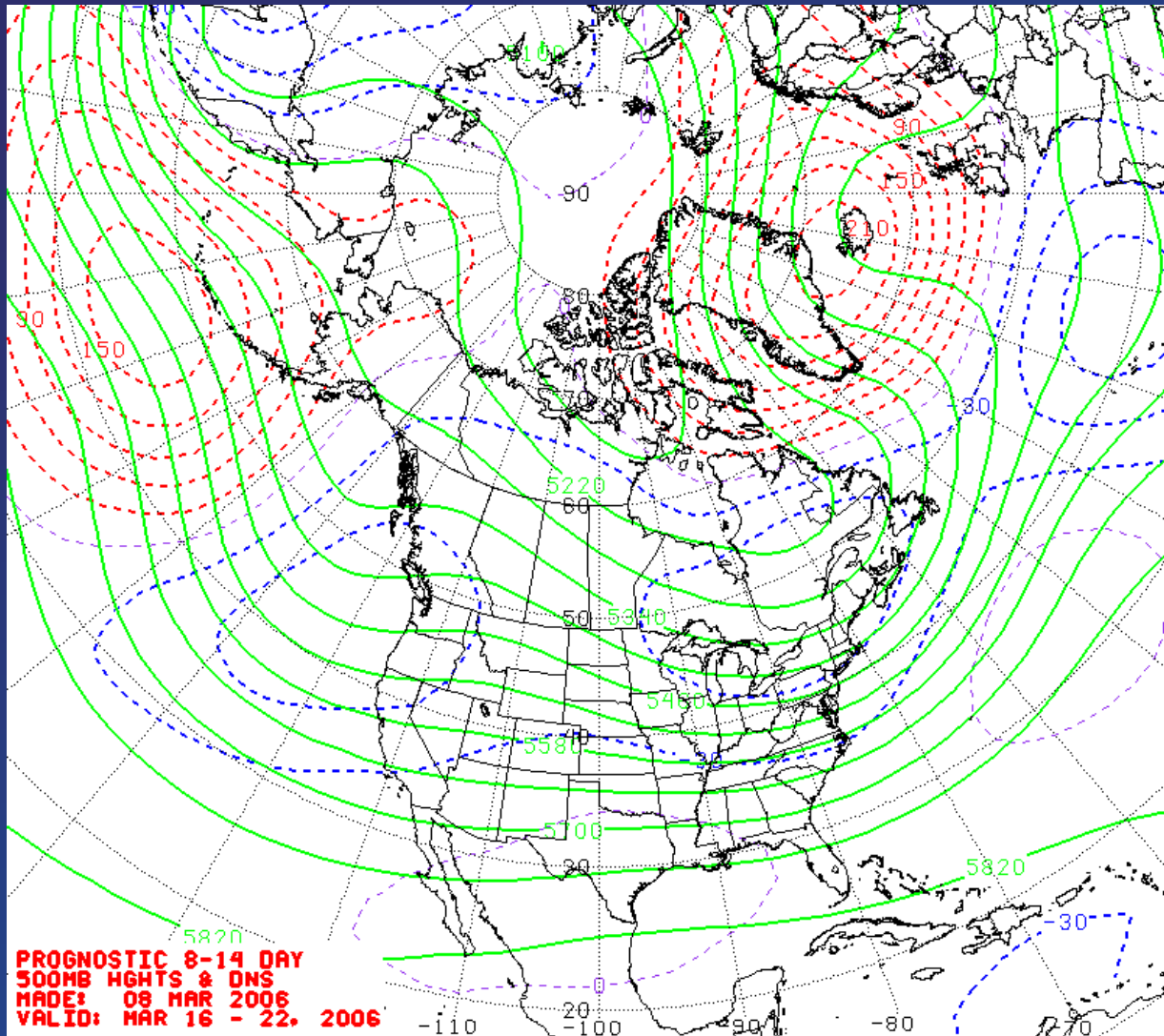


+4.00
and
above

- 💧 No climate divisions classified as 'Drought'
- 💧 5 climate divisions in 'Mid-Range'
 - *West*
 - *North central*
 - *Central*
 - *Northeast*
 - *Southeast*
- 💧 2 climate divisions 'Moderately Moist'
 - *Southwest*
 - *South central*

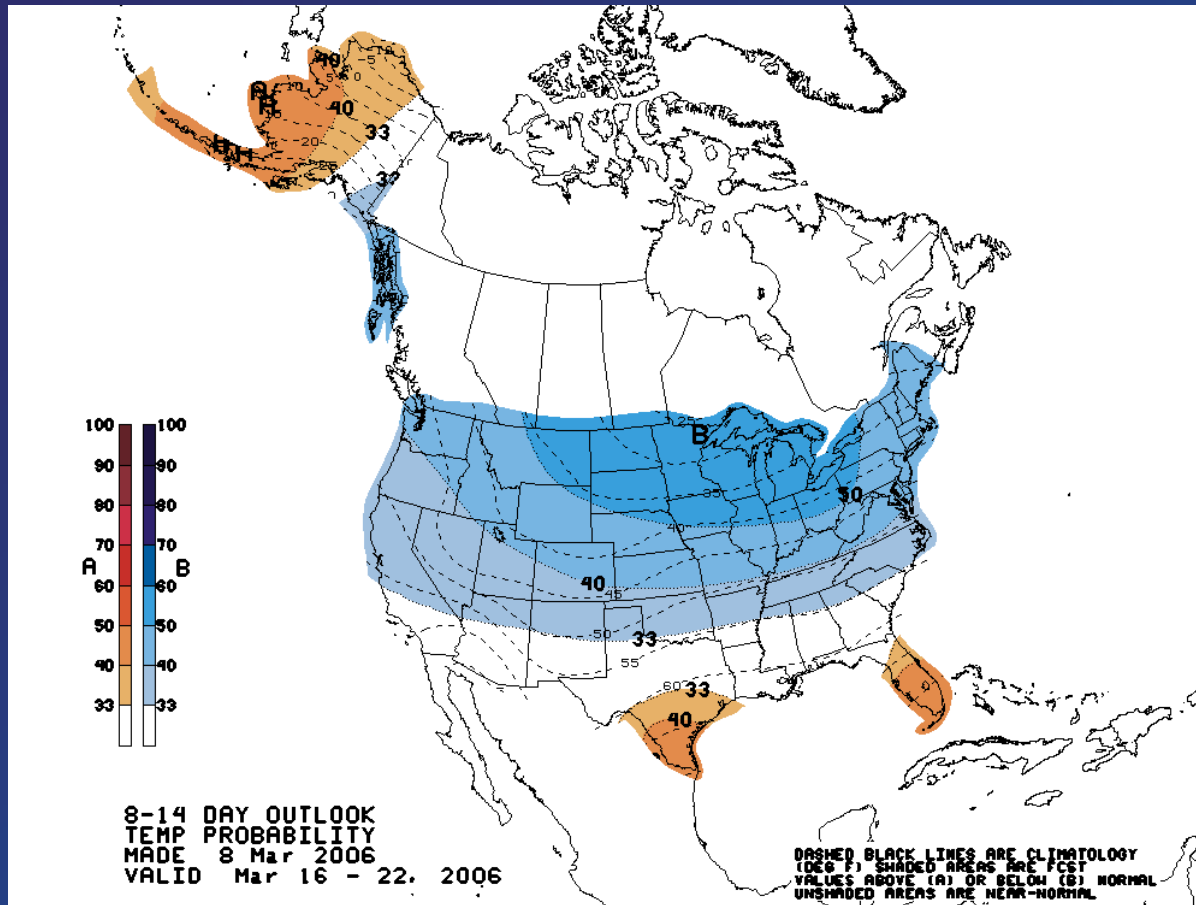
8 to 14 Day Outlook

500mb Heights and Anomalies



- Long wave trough developing over western U.S.

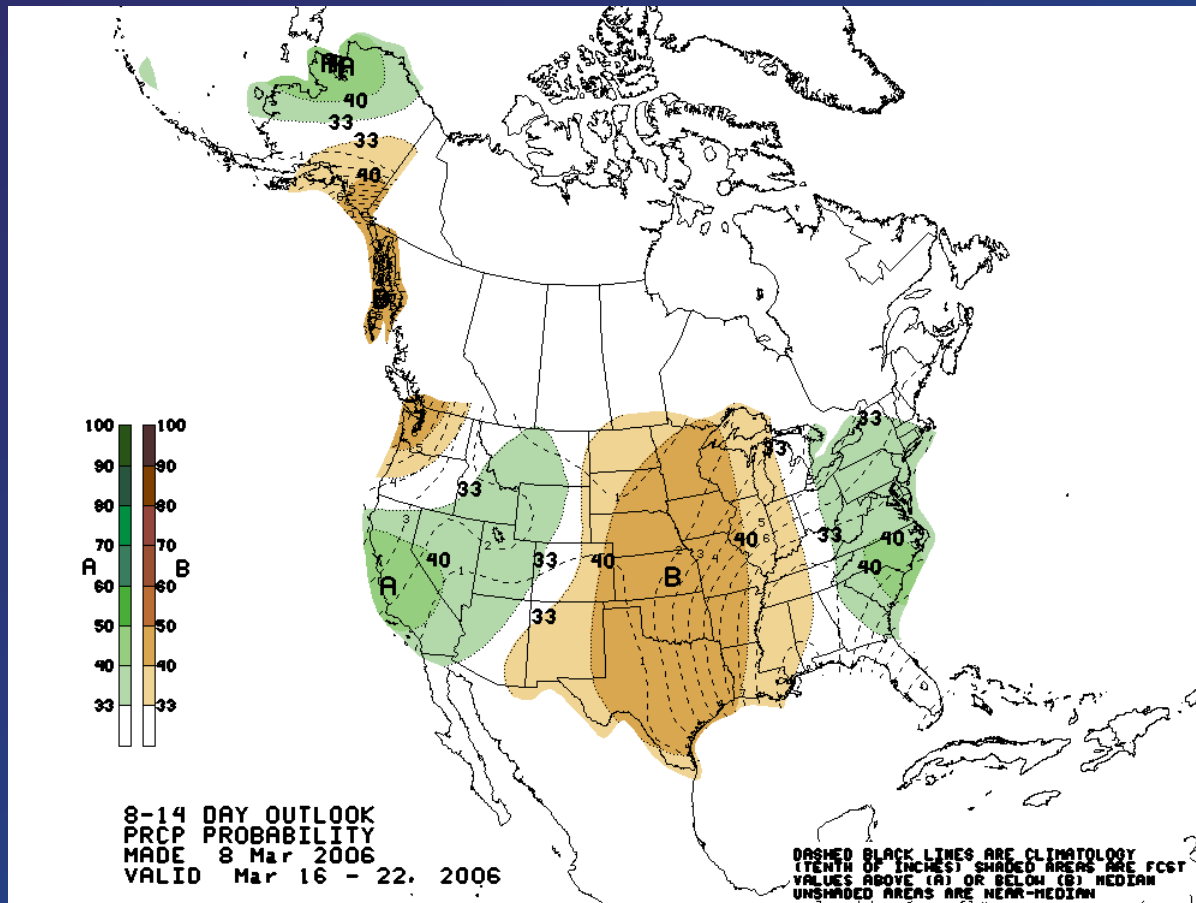
8 to 14 Day Outlook – Temperatures Cooler



- 40% to 50% chance temperatures will be below normal over western Montana
- Better than 50% chance temperatures will be below normal over eastern Montana
- Averages
 - Highs – Upper 30s and 40s
 - Lows – Teens to mid 20s

8 to 14 Day Outlook – Precipitation

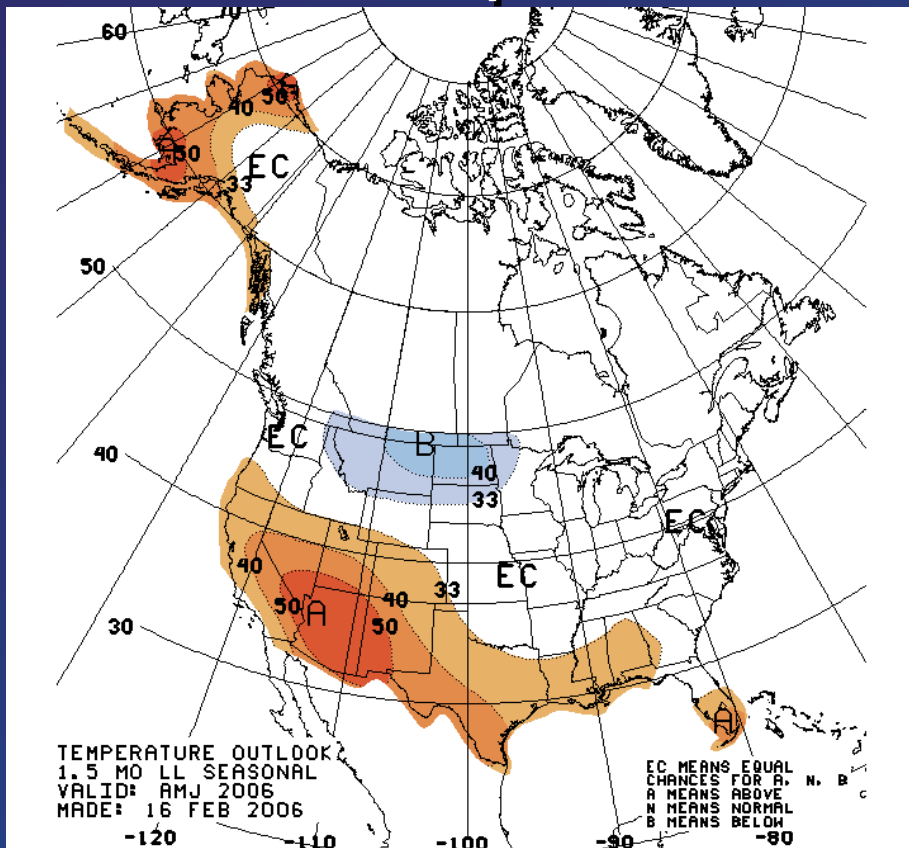
Spring precipitation



- 33%-40% chance precipitation will be above normal over a large portion of southwest and central Montana
- Remainder of the state has equal chances for above... below or near normal precipitation
- Normals
 - 0.50 to 1.25 inches

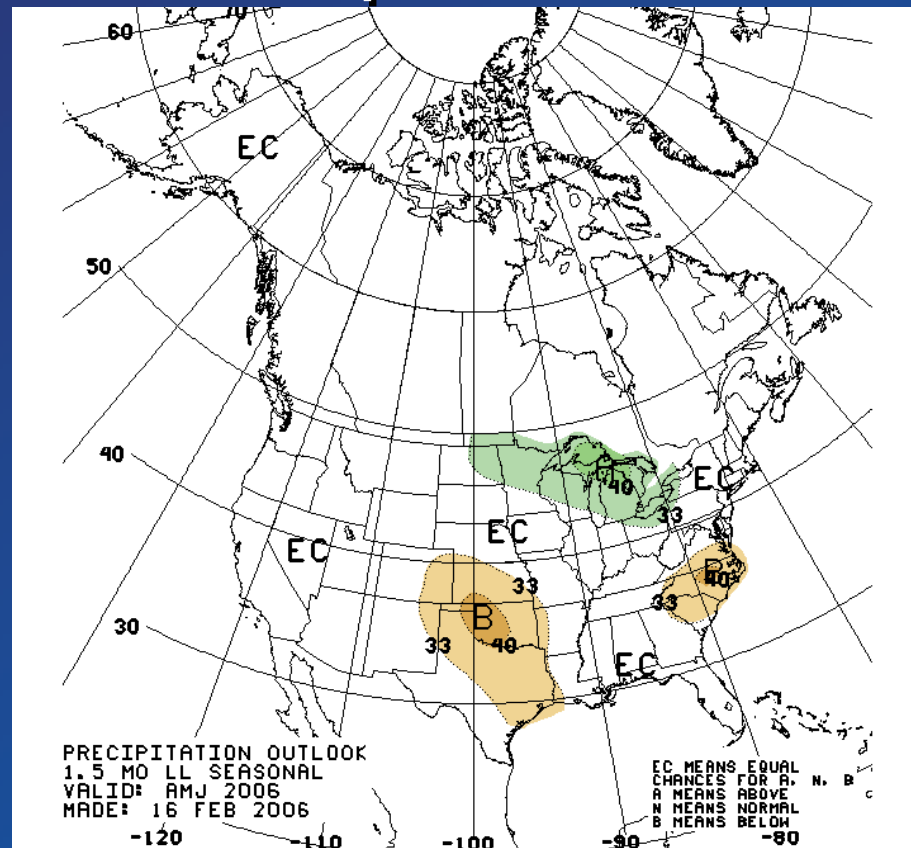
April – June Outlook

Temperature



- 💧 Better chances temperatures will be below normal across Montana
 - 33% to 40% chance west and south
 - 40% to 50% chance northeast

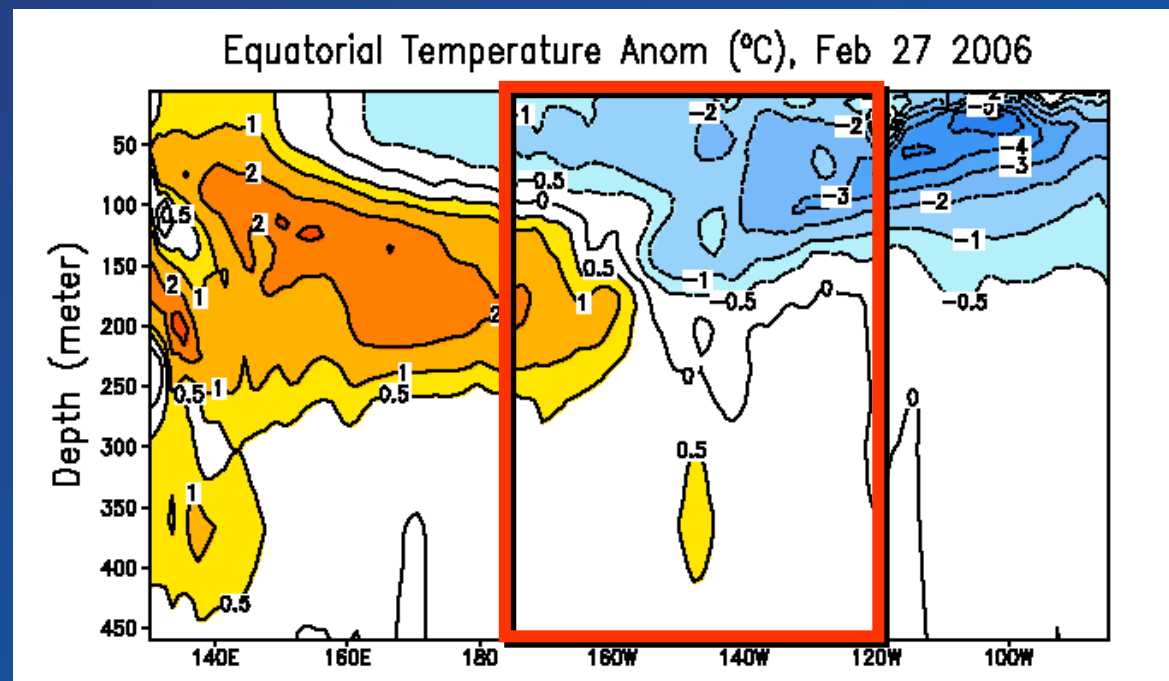
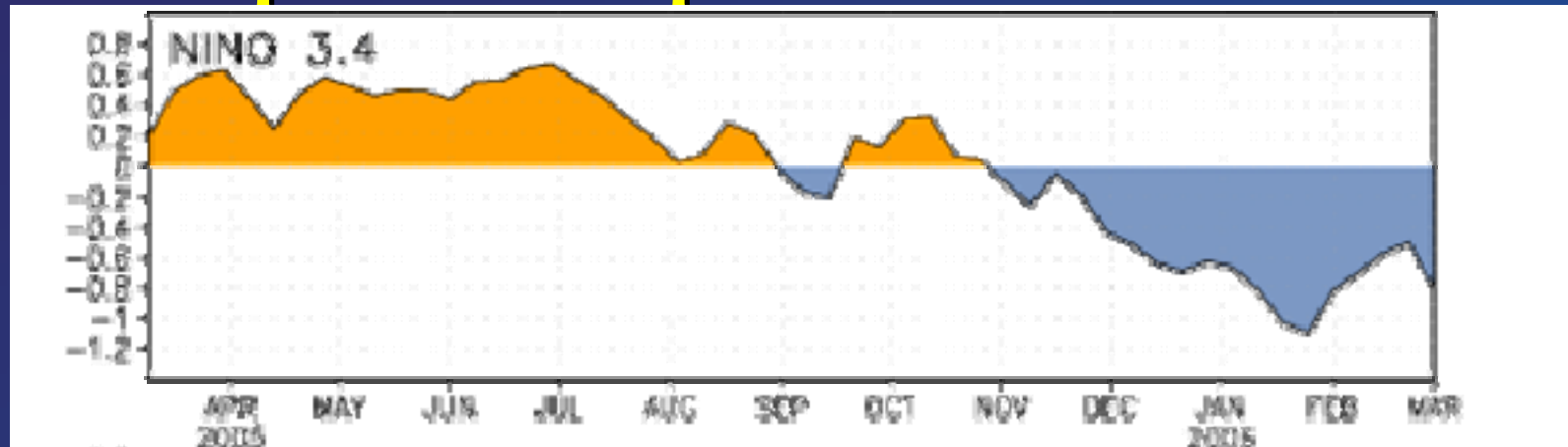
Precipitation



- 💧 No forecast skill... therefore equal chances precipitation will be above... below or near normal across all of Montana

Development of La Niña

Expected to persist next 3-6 months

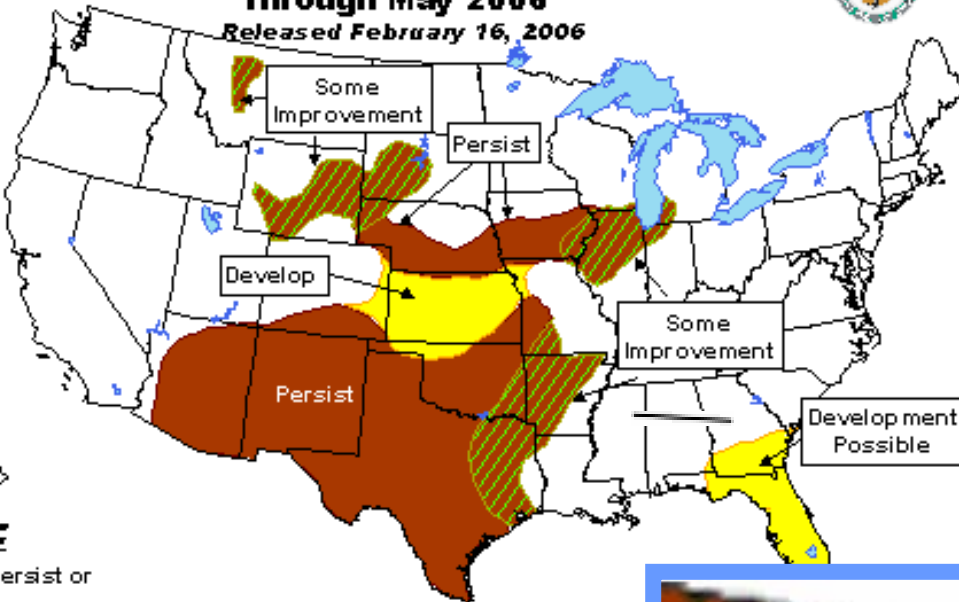


Drought Outlook through May

Issued February 16, 2006

U.S. Seasonal Drought Outlook Through May 2006

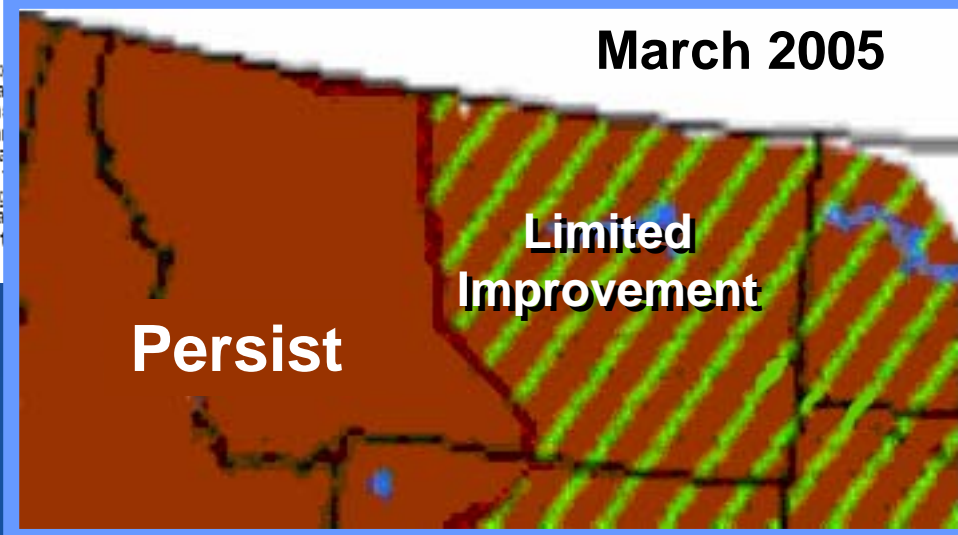
Released February 16, 2006



Depicts general, large-scale trends based on a synthesis of numerous indicators, including short-term dynamical forecasts. Short-term events — such as accurately forecast more than a few days in advance outlook for applications — such as crops — that are “ongoing” drought areas are approximated from. For weekly drought updates, see the latest Drought Monitor. NOTE: the green improvement areas imply at least a 10% reduction in the Drought Monitor intensity levels, but do not eliminate.

Areas of drought that remain are expected to improve some through the spring

March 2005



In Summary...

- 💧 **Conditions much better this year than last**
 - *And the year before that...*
 - *And the year before that...*
- 💧 **Only a couple areas to watch**
 - *Rocky Mountain Front*
 - *South central – Carbon County*
- 💧 **Currently nothing in forecast that would suggest return to drier regime**

weather.gov

weather.gov/billings

weather.gov/glasgow

weather.gov/missoula

weather.gov/greatfalls